

CONTENTS

* ATARI *
MORSE

by

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CONTENTS

Transmit Interfacing.....	1
Receive Interfacing.....	3
TX Interface Schematic.....	5
RCV Interface Schematic....	6
TX Function List.....	7
Inside ATARI MORSE.....	8
Modifications.....	9

**** ATARI MORSE ****
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KINETIC DESIGNS

ATARI MORSE, with a small amount of hardware, will allow you to use your ATARI computer to transmit and receive morse code over your ham station at up to 25 wpm. ATARI MORSE requires only an Atari 800 or 400 computer with 16K of memory.

INTERFACING ATARI TO YOUR STATION

Interfacing ATARI to your station will be handled in two phases. First, the simplest, will be the connection between ATARI and your transmitter. Figure 1A shows a simple interface which should work on most all stations. RL1 is a reed relay used to isolate ATARI from the high voltage that may be present in some transmitter's keying circuits.

Be sure the relay you use has a high enough voltage rating on the contacts for your rig. Figure 1B is for transistor rigs or electronic keyers. No relay is needed. Power for the transistor is from the keyer itself. (You may have to turn the leads over on your keyer for proper operation.)

Connection to ATARI for either circuit is through pin 1 of JOYSTICK PORT # 3 on the front of ATARI. Ground is available at pin 8 of port 3. Leave your hand key in parallel with the ATARI keyer, just in case ATARI crashes in the middle of a QSO.

ATARI MORSE

TESTING THE TRANSMIT SECTION

After installing the transmit interface, turn on ATARI and CLOAD Atari Morse. Leave your transmitter off for the moment. When 'READY' appears, type RUN <RETURN>. A copyright notice will appear for a few seconds. ATARI will then ask you what speed, in words per minute, you wish to send. Type in a number between 5 and 25 and press <RETURN>. 'TX;' will now appear on the screen. Press any key and the letter associated with that key should appear on the screen. Connect the transmitter to a dummy antenna, reduce the power output setting to minimum (if possible), and turn it on. The transmitter should not be transmitting. If it starts transmitting without touching ATARI, turn off the transmitter and check your interface wiring. If you are using Figure 1b, you may need to reverse the leads going to the keyer or transmitter. If your transmitter is operating normally, that is you are able to key it with your hand key, tune up into the dummy antenna. Next, press a key on the ATARI. That letter should be sent by the transmitter, and should appear on the TV. If keying is improper, RF may be entering your interface and shielding required. Try sending several letters or words. To change speeds, press 'control-S'. The 'TX SPEED' prompt will appear. Enter your new speed (between 5 and 25 wpm), and hit <RETURN>. See the TX functions list for more information on options available.

You now have a morse keyboard! If you wish to also receive morse with ATARI and have the ability to build a more complex circuit, then read on, otherwise Happy Keying!

ATARI MORSE

RECEIVE INTERFACE:

With the circuit in Figure 2, the ATARI can also receive and decode morse at up to 25 wpm.

The circuit is designed to convert incoming 1000hz tones into 1's and 0's for ATARI. The input is connected directly across your receivers' speaker. The transistor amplifies the incoming signal for input into the 567 PLL. The PLL, with a bandwidth of 150-200 hz detects the tone and converts it to a digital signal for ATARI. When a tone is detected, the LED will light. Dots and dashes will cause it to blink on and off. The PLL is connected to ATARI's JOYSTICK PORT #3, pin 6. Construction is not critical but all input and output leads should be shielded from stray RF.

TUNING THE RECEIVE CIRCUIT

With the receive interface connected up to ATARI and your receiver, power up ATARI and your receiver. Note: If you have a transceiver and the transmit interface is connected to ATARI, your transmitter will be keyed. Just disconnect ATARI from the transmitter. (A switch in the key lead to the transmit interface might be useful.) Turn on your CW filter and tune to a steady carrier (such as a broadcast station). Turn the trimmer on the interface until the LED lights. Tune the receiver up and down frequency. The LED should go out as you shift out of the PLL's bandpass. It should not flicker unless

ATARI MORSE

noise is high. Tune in a strong CW station. The LED should solidly blink on and off. Input resistor R1 may need adjusting if the LED flickers from noise or comes on only at high volume levels.

USING ATARI MORSE ON RECEIVE

LOAD Atari Morse and RUN, set your transmit speed. This will not affect ATARI's receive speed as the program is self-adjusting. Press 'control-R' to receive on ATARI. Pressing 'control-T' will switch you back to the transmit mode. Tune in a good CW signal and ATARI should start decoding. Poor sending, fading, and noise are ATARI's worst enemies for receiving morse. See modifications sections on how to correct for "swing-fisters". HAVE FUN!

ATARI MORSE

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ATARI MORSE

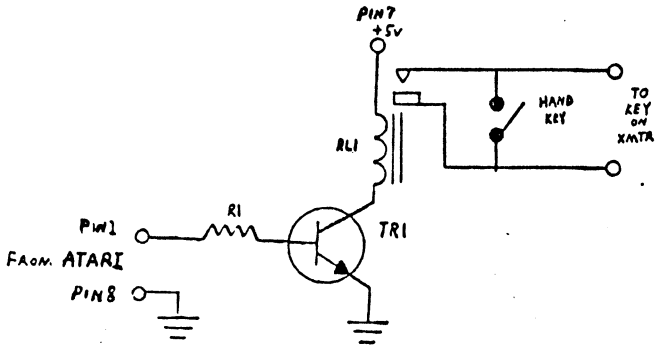


Figure 1A

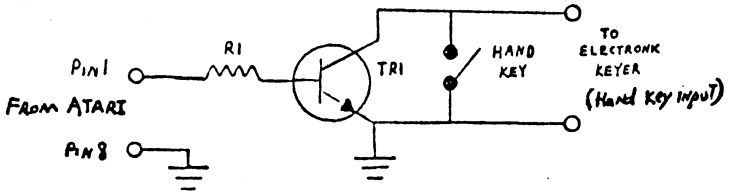


Figure 1B

PARTS LIST

- TR1 - 2N2222
- RL1 - 5VDC Relay Radio Shack 275-216
- R1 - 1K $\frac{1}{4}$ w resistor

ATARI MORSE

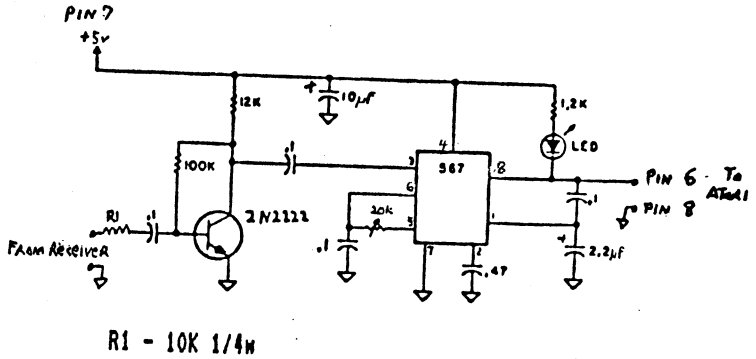
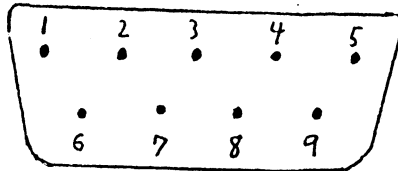


Fig. 2. Interface circuit.

USER I/O

CONTROLLER JACK #3 FRONT PANEL



- 1 - TRANSMIT OUT
- 6 - RECEIVE IN
- 7 - +5 VOLT POWER
- 8 - GROUND

* Note That Jack #3 is used - Leaving #1, 2, and 4 spare.

MORSE

TX FUNCTIONS:

In the transmit mode, the following functions are available:

- Backspace - Sends 'ERROR' (8 dits)
- control-A - Sends AS (standby)
- control-B - Sends BK (break)
- control-C - Sends his call, 'DE', and your call. See modifications to change your call.
- control-G - Sends the 'Good-bye' dittle ie. dit didit dit dit.
- control-I - Input call of station working. (for control-C)
- control-K - Sends SK (end of QSO)
- control-R - Goto receive mode
- control-S - Change speed 5-25 wpm
- messages - Use 'SHIFT' key and number keys 1 thru 9 for preset messages.

Nine messages of 255 characters each are available. (may be less on ATARI's without meary expansion.) Press the <RETURN> key to abort transmission of a message. See modifications section to change messages.

ATARI MORSE

INSIDE ATARI MORSE:

Lines 120-490	- TX mode
Lines 190-290	- Special functions
Line 310	- Table lookup
Lines 360-490	- Keys output using morse in B*
Lines 510-590	- Special functions & commands
Lines 610-630	- Call sign (control-I & control-C)
Lines 650-700	- Morse TX DATA
Lines 720-870	- Message handling routine
Lines 890-1100	- Messages
Lines 1110-1230	- Initialize
Lines 1240-1490	- RCV mode
Lines 1310-1370	- Key down character check
Lines 1380-1460	- Key up space
Lines 1470-1480	- Decode & print character
Lines 1490	- RCV DATA

ATARI MORSE

MODIFICATIONS:

The following TX mods can be done to customize ATARI MORSE for your needs. After making the mods, you can save ATARI MORSE on a blank tape, using it while keeping the original as backup. Please don't make copies for your friends. Just tell 'em how to order from us.

1) Change line 620 to your call, ie. 620 M\$="yourcall"

2) Change messages in lines 910 to 1090 to yours. Up to 114 characters per message. To make messages longer than 114 characters, type the following:

910 M\$="YOUR FIRST MESSAGE...."

911 M\$(LEN(M\$)+1)=" CONTINUATION OF YOUR FIRST MESSAGE..."

912 M\$(LEN(M\$)+1)=" ON AND ON..."

913 M\$(LEN(M\$)+1)=" AND MORE IF YOU LIKE.."

914 M\$(LEN(M\$)+1)=" UP TO 255 CHARACTERS WORTH!"

.

.

930 M\$="FOR ALL 9 MESSAGES IF YOU LIKE..."

931 M\$(LEN(M\$)+1)=" OVER 2295 CHARACTERS LONG!"

ATARI MORSE

RCV MODIFICATIONS:

For "swing-fisters" you can change the factor in lines 1330 and 1410 from (.60% C) to (.25% C) or (.75% C).

